

## The Rhabdiphorid *Tachycines asynamorus* Adelung in America (Orthoptera, Gryl- lacrididae, Rhabdiphorinae)

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In 1898 S. H. Scudder briefly reported<sup>1</sup> the capture in greenhouses in Minnesota of a striking and spidery rhabdiphorid camel-cricket, which he considered to be an introduction of the Japanese *Diestrammena marmorata* (De Haan). Otto Lugger, who had sent the specimens to Scudder, the same year gave more details of the occurrence of the insect,<sup>2</sup> which had been captured in the conservatory of the Minnesota State University at Minneapolis. Since that time there have appeared in the literature numerous records, as *D. marmorata* and also as the related *D. unicolor*, of the occurrence of this rhabdiphorid in greenhouses or cellars, and even in wells, at a considerable number of localities distributed over the northern portion of the United States east of the Rocky Mountains, extending from Maine and New Jersey to the Dakotas and Colorado, south to Tennessee. It has also been reported from Ontario, Canada.

Morse in his classic "Orthoptera of New England" has given us<sup>3</sup> by far the best picture of the habits and actions of the species as it occurs with us. The same year, 1920, Blatchley noted<sup>4</sup> that De Haan's 1842 name *Locusta (Rhabdiphorus) marmorata*, based on Japanese material, was a primary homonym of *Locusta marmorata* Harris, 1841,<sup>5</sup> and renamed the species *Diestrammena japonica*, the latter spelling apparently being a lapsus calami for *japonica*.

Unfortunately the failure by American students to correlate the determinations of this insect with conclusions then being published by European workers, was responsible until later than 1920 for the continued and erroneous reference of the

<sup>1</sup> Psyche, VIII, p. 180.

<sup>2</sup> Third Rep. Entom. Minn., p. 254, fig. 166.

<sup>3</sup> Page 377, (1920).

<sup>4</sup> Orth. of N. E. Amer., p. 611, (1920).

<sup>5</sup> Report Ins. Mass. Inj. Veget., p. 145.

species as occurring in America to *Diestrammena*, and specifically to *D. marmorata*. In 1902 Nicolas de Adelung, the distinguished Russian orthopterist, described as a new genus and species, *Tachycines asynamorus*, a rhabdiphorid which had been found in greenhouses at St. Petersburg (the present Leningrad), Russia.<sup>6</sup> He also reported that species as occurring in palm conservatories at Lubeck, Germany, and Brussels, Belgium. In 1914 Lucien Chopard, who had previously reported *Diestrammena marmorata* from greenhouses in France, corrected his previous determination and stated<sup>7</sup> this material and other individuals from similar situations at localities in Hungary, Austria, Germany, France and England represented instead Adelung's *Tachycines asynamorus*. He also reported having examined material of this species taken under natural conditions ("en plein air" as he subsequently commented) in Szechuan Province, China. At the same time he suggested that the *Diestrammena* reported from the United States might instead be this genus and species. The same author in 1916 presented tables for the separation of the genera *Diestrammena* Brunner and *Tachycines* Adelung, and also for the identification of the then known species of the two genera.<sup>8</sup> In 1921 he expressed the opinion that *T. asynamorus* had originated in Japan,<sup>9</sup> but in 1938 he was more inclined<sup>10</sup> toward his earlier belief that Szechuan was its probable native home.

In 1920 Karny<sup>11</sup> examined De Haan's unique female type of *Locusta* (*Rhabdiphorus*) *marmorata*,<sup>12</sup> in the Leyden Museum, and showed that it is a true *Diestrammena*, differing from *Tachycines* in the caudal tibial characters which Chopard in 1916<sup>13</sup> gave to distinguish the two genera. We now know that both genera occur in Japan, and elsewhere in eastern Asia.

<sup>6</sup> Ann. Mus. Zool. Acad. Imp. Sci. St. Pétersb., VII, pp. 56, 59, text-figs. a & b.

<sup>7</sup> Bull. Mus. Hist. Nat. Paris, 1914, no. 4, pp. 1-2.

<sup>8</sup> Bull. Soc. Entom. France, 1916, pp. 154-159.

<sup>9</sup> Bull. Soc. Entom. France, 1921, p. 209.

<sup>10</sup> "La Biologie des Orthoptères" (Encycl. Entom., XX), pp. 117-118.

<sup>11</sup> Zool. Mededeel., V, p. 142.

<sup>12</sup> In Temminck, Verhandl. Natuur. Geschied. Nederl. Overz. Bezitt., Bijd. Kenn. Orthopt., p. 217, (1942).

<sup>13</sup> Bull. Soc. Entom. France, 1916, pp. 154-156.

Of American workers Hebard was the first to point out in print<sup>14</sup> that the "*Diestrammena marmorata*" of American authors is *Tachycines asynamorus*, although Morse in 1920 had noted<sup>15</sup> that the species for which he used the name *D. marmorata* had "been recorded from many places in Europe by Chopard as the *Tachycines asynamorus* of Adelung." Hebard in the same paper synonymized Blatchley's *Diestrammena japonica* under *Tachycines asynamorus*, apparently on the grounds that Blatchley's description and figure (the latter taken from Lugger) refer to the latter genus and species. Karny, however, has taken issue<sup>16</sup> with this action, and considers that Blatchley's name, which Karny emends to *japonica*, as he regarded *japonica* as meaningless and a lapsus, must replace De Haan's *marmorata*, which is preoccupied by that of Harris, as shown above. While all the material Blatchley knew is definitely *Tachycines asynamorus* and not the species named by De Haan, the former made the very exact and definite statement that "a new specific name is therefore necessary for De Haan's insect," and this name he there supplied. The majority of my taxonomic colleagues feel that, regardless of what he had before him, Blatchley's direct statement regarding what he was renaming is conclusive. This opinion makes Blatchley's *japonica*, as emended by Karny, the proper name for the Japanese *Diestrammena* called *marmorata* by De Haan, and as such it has consistently been used by Karny. That author noted in the same 1930 paper that *T. asynamorus* had been taken by Tarbinsky under natural conditions in coniferous forest in the Government of Viatka (the present Kirov), European Russia.

My present interest in *Tachycines* was occasioned by a request for determination placing in my hands a small series which had been taken in the cellar of a house in Philadelphia in September, 1943. The insects were there in sufficient abundance to warrant a call for advice in controlling them. This is the first occurrence known to me of the species in the immediate Philadelphia area, or in fact in Pennsylvania.

<sup>14</sup> Proc. Acad. Nat. Sci. Phila., LXXVII, p. 146, (1925).

<sup>15</sup> Orth. New Engl., p. 376.

<sup>16</sup> Ann. Nat. Hist. Mus. Wien, XLIV, p. 173, (1930).

It is now possible to remove any question as to the identity of American material with Adelung's species. In the Hebard Collection at the Academy of Natural Sciences of Philadelphia there is a topotypic (St. Petersburg) pair of *T. asynamorus*, received from the Leningrad Zoological Museum, and determined by the Russian orthopterist Dr. E. Miram, after comparison with Adelung's type material. These authentic individuals have been compared with specimens in the Philadelphia collections from Elmhurst, Long Island, New York; Philadelphia, Penna.; Springfield, Ohio; Chicago, Ill.; Wauwatosa, Wisc.; Clarksville, Tenn.; Mt. Pleasant, Iowa; Minneapolis and St. Paul, Minn.; Fargo, North Dakota, and Brookings, South Dakota. Material from nearly all of these localities has been cited in past literature, but generally as *Diestrammena marmorata*, which, however, is not known to occur in North America. In all probability *Tachycines asynamorus* will become very generally established in suitable situations over much of the United States, but due to its environmental requirements its control, when present, should not be particularly difficult. Bue and Munro<sup>17</sup> recently have given important notes on its habits and control in greenhouses.

In the collections at the Academy of Natural Sciences in Philadelphia we have material of several species of *Diestrammena* and of *Tachycines asynamorus* from Kyoto, Japan. This considerable series of *T. asynamorus* is inseparable from the above mentioned topotypes. Unfortunately we have no information regarding the conditions under which the species occurred at Kyoto.

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**Correction:** In the article by F. Earle Lyman entitled "Eye-color changes in mayflies of the genus *Stenonema* (Ephemeroidea)" (Entom. News, LIV, p. 261, Dec. 1943), the ordinal name Ephemeroptera should have been used instead of the family name Ephemeroidea. The Editors.

<sup>17</sup> Journ. Econ. Entom., XXXII, p. 468, (1939).